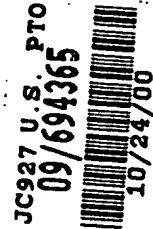




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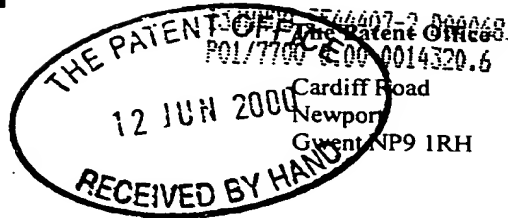
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3. Full name, address and postcode of the or of each applicant ( <i>underline all surnames</i> )	Peter Ernest Hookham-Miller  No. 9 Monk Well Square London EC2Y 5BN		
Patents ADP number ( <i>if you know it</i> )	7 845 761 001		
If the applicant is a corporate body, give the country/state of its incorporation			
4. Title of the invention	PRESENTING PROGRAMS		
5. Name of your agent ( <i>if you have one</i> )	PAGE WHITE & FARRER		
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	GB	0005018.7	1 March 2000
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## PRESENTING PROGRAMS

The present invention relates to presentation of programmes, and in particular, but not exclusively, to provision of  
5 further content and/or interactivity to the users of program presentation means by means of a data communication system.

Broadcasting system for transmitting programs, such as TV programs or radio programs, to be represented by a receiver  
10 apparatus to the users ("audience") thereof are known. For example, the skilled person is aware of the principle and operation of a television program broadcasting system and the concept of displaying television programmes to the viewers of television sets, and therefore the operation thereof will not  
15 be explained in detail. It is sufficient to note that the broadcasting systems include systems such as wireless broadcasting systems, satellite transmission systems and cable broadcasting systems and so on and that the program transmissions may comprise analogue or digital signals and/or  
20 a combination of these.

The programmes may be transmitted as live transmissions or as recorded programmes. The live transmissions show an event, such as a football game, news or a lottery draw, substantially  
25 in real-time for the viewers. The recorded programmes have been prepared beforehand and will be transmitted and shown later on to the viewers at an appropriate time. Recorded programs may also be represented from a storage media, such as video or audio tape, compact disk (CD) or digital video disk  
30 (DVD) e.g. by means of a video player, video disk or CD player or a tape player. The recording may contain a program that has been broadcast earlier or a recording that has been prepared to be distributed e.g. through video shops or record stores.

The programmes can also be divided in several categories, such as news, sport, game shows, entertainment programs, comedies, drama series, movies, children programmes, educational programmes, documentaries, and so on. For example, the purpose of the educational programmes is to help the viewers thereof to learn new things and to develop their knowledge and/or skills. The educational programmes may be viewed by various groups of people, such as small children or schoolchildren, students, adults, or anybody else wishing to learn new things. The game shows may include, for example, entertainment games with no prizes or only modest prizes and gambling, such as lottery or betting.

Programmes, such as documentaries, educational programmes and/or game shows, may include various stimulating features or events, such as questions to be answered or special tasks to be performed by the viewers or listeners or other events to which the remote audience may wish to give feedback or from which the viewers may wish to receive more information. Individuals watching dramas or comedies might wish to have influence over the story and/or the end of the story. People watching documentaries may wish to receive some further information of the facts and/or background and so on.

It is believed that interactivity may make the programmes in general more interesting and/or increase the efficiency of the educational programmes. For example, the viewer of a TV program may wish to have the possibility to respond to questions, events or other stimulating features of the programmes they are currently viewing. The conventional one-way broadcasting systems, however, may not be able to provide

feasible, easy-to-use and affordable interactivity to as the remote audience might wish to have.

The viewer (or listener) may also wish to receive further  
5 content that associates with the program he is viewing. The  
content could be any associating information such as further  
information of the events or characters of the program,  
background information, information of the rules of a game  
that is to be presented and so on. The further content could  
10 also comprise views from another angle(s), replay of certain  
events, additional views or parts of the program not presented  
by the broadcasting system and so on.

The previous proposals have suggested use of public switched  
15 telecommunication networks (PSTN) for interaction with the  
program. In accordance with the earlier proposals the viewer  
or listener needs to have a telephone in order to make a  
telephone call to the television studio. The viewer may also  
contact the studio through a personal computer (PC) connected  
20 to the Internet to give his answer or give some other feedback  
or to fetch further information. The broadcasting systems in  
general may not have been enabled to provide any tailored  
communication towards selected users other than by a telephone  
(or Internet) call between the viewer and e.g. the presenter  
25 of the program through the public telephone network. Some  
viewers may find it inconvenient to make a call to a  
particular number provided by the program. Although the  
Internet may be used for the communication, not everyone has a  
home PC that is connected to the Internet. A percentage of  
30 people may also find the PCs and Internet subscriptions too  
expensive and/or difficult to install and/or use and/or  
operate.

The previous proposals may thus not have been able to deliver a cost-effective solution for interaction with the broadcasting system, such as for interactive learning or for game shows or for fetching further content that associates  
5 with the program. This has been held back by lack of solutions offering an affordable and workable solution for providing a communication channel towards the broadcasting system or any other source of further content. The present proposals may not be able to provide personalised interactivity and/or further  
10 content to individual users in a satisfactory manner.

The users may also wish to have mobility while viewing or listening to the program. The mobility may be restricted by a wired connection between a terminal that may be used for the  
15 interactive communication and the telecommunication system. Furthermore, the present arrangements may also provide only limited possibilities for providing interactivity and/or further content in association with recorded programs.

20 It is an aim of the embodiments of the present invention to address one or several of the above problems.

According to one aspect of the present invention there is provided a method for presenting a program for a user,  
25 comprising: storing information that associates with the user in a remote unit; providing a program representation device with a program signal; presenting the program based on the program signal; and in response to a predefined event, transporting data that associates with the program based on  
30 said stored information between the remote unit and a user device that the user may operate while experiencing the program presented by the representation device, the data being



transported via a data network and a wireless communication link between the user device and the data network.

According to another aspect of the present invention there is provided a system for presenting a program to a user of a program representation terminal, comprising: means for providing a program signal to the program representation terminal; a data communication network; a remote management unit that is connected to the data communication network, said remote management unit comprising a processor for processing data that associates with the program and a storage unit for storing information that associates with the user; and a user device operable by the user while experiencing the program, the user device being associated with a wireless module enabling a wireless communication link between the user device and the data communication network, wherein the user device is adapted to present information to the user based on data that is generated by the management unit based on the stored user information and transported to the user device from the management unit via the data communication network and the wireless link.

According to more specific embodiment of the invention, data may be transported from the remote unit. Data that associates with the program may also be stored in the remote unit. Data may also or alternatively be transported from the user device. A broadcasting system or an apparatus for replaying recorded programs may provide the representation device with the program signal. The user device may comprise a portable controller, or the apparatus for replaying recorded programs or the representation device itself. Wireless communication may be arranged between the controller and other apparatus of the system.

The wireless link may comprise a short range radio link. The wireless link may operate in an unlicensed radio frequency band. The wireless link may employ frequency hopping, wherein  
5 the frequency may be changed between subsequent data packets.

The data transported over the wireless link may comprise control instructions for the user device, additional information that associates with the program, and/or further  
10 content that associates with the program. The data transportation between the user device and the remote management unit may provide interaction between a viewer of a television program and the television system. The program may include at least one event to which the user may react by  
15 inputting a response into the user device. The user device may present an audio message and/or a visual message based on data transported from the remote unit. Voice messages may be transported based on the voice over internet protocol (VOIP).

20 The data transportation may be triggered by a predefined event in the program or based on monitoring of a time-code that associates with the recording media used for storing the program. The user may also trigger the data transportation by inputting a speech message into the controller or by pressing  
25 an appropriate key or keys. At least one element of the user device may be operated based on data received from the remote management unit.

Data to be transported to the user device may be personalised  
30 before transportation based on the information stored in a database of the remote management unit. The user may be enabled to modify the information stored in the database.

The embodiments of the invention may provide a cost effective way for enabling e.g. the viewer of a TV programme to interact with it and/or to receive further content and information that associates with the program. The embodiments may enable an  
5 easy and/or affordable interaction with a program. The embodiments may be used in any home today with the existing television or radio receiver sets. Some embodiments may enable provision of selective and/or tailored data to selected viewers. The embodiments may make programs that are based on  
10 interactive learning and/or children programs and/or gaming programs and the like more interesting for the viewers. The embodiment may also enable more feasible and affordable communication between the users and the program service providers than in the conventional solutions.

15

For better understanding of the present invention, reference will now be made by way of example to the accompanying drawings in which:

Figure 1 shows one embodiment of the present invention;

20

Figure 2 is a flowchart illustrating an embodiment of the present invention;

Figure 3 shows further embodiments of the present invention; and

Figure 4 shows an embodiment wherein data is communicated  
25 via a cellular network.

Reference is made to Figure 1 which shows an embodiment of the present invention that relates to presentation of TV programs that are transmitted by means of a public television broadcast  
30 network 5. The television network 5 can be of any type, such as a conventional analogue network or a digital television network. The network 5 includes a wireless transmitter or antenna 2 for transmitting the television signal towards

television apparatus 1. It should be appreciated that instead of distributing the television signal through antennae, the signal may be distributed through other media, such as cable or satellite subscriptions (not shown). It should also be appreciated that although only one antenna and TV set is shown for clarity reasons, the number of the antennae and TV sets connected to the TV network is typically much higher.

The television network is also provided with a broadcasting apparatus 3 for the provision of the TV programmes to the antennae. It should be understood that the broadcasting apparatus typically includes various different elements in the TV studio and elsewhere in the television system. The apparatus that is required for the provision of the television program signal to the antenna 2 and the operation thereof is known and does not form a part of the invention as such, and will thus not be described in more detail.

The Figure 1 system includes further a data processing entity or management unit 4 comprising a processor facility 5 and storage means or database 7. The database 7 is provided for storing information on the individual users 14 of the system. The information stored in the database 7 may be used to personalise communication towards individual users. For example, it is possible to personalise additional content that associates with a particular program. In the simplest form the user related information comprises indication that the user is allowed to fetch data from and/or transmit data to the management unit 4. The database 7 or a separate database is also preferably used for storing information that associates with the programs, such as additional content or background information. The management unit or 'hub' 4 may communicate via a connection 17 with one or several elements of the

television system 5, although this is not a necessity in all embodiments, as will be discussed later with reference to Figure 3.

5 The management unit 4 is connected to appropriate gateway apparatus 8 for enabling communication via a data communication network 6. For example, the management unit 4 may be provided with voice over IP (Internet Protocol) gateway apparatus for enabling voice communication via a packet  
10 switched IP protocol based data network. The skilled person is familiar with various possible gateway arrangements for connecting a data processing entity to a data network, and therefore they are not discussed in more detail.

15 The management unit 4 may be operated and run by an independent service provider providing interactivity and/or other content services. The management unit 4 may alternatively be controlled by the TV company itself. The presenter of a program and/or the production team of a TV  
20 program may also have a connection to the management unit 4 so that they may communicate with the viewers through the interaction system and/or control the communication between the viewer i.e. the user 14 and the management unit 4, as will be explained later.

25

The data communications network 6 may comprise any network that is capable of providing data transportation services for the management unit 4. The communication system provides preferably broadband communication services for the  
30 subscribers thereof. The broadband services may be provided e.g. to home users through a connection that is based e.g. on a cable modem, an integrated services digital network (ISDN) or an asynchronous data subscriber line (ADSL). A

communication system includes typically various elements, such as one or more network controllers, exchanges and/or routers (not shown for clarity reasons) and one or more gateways 8.

- 5 A home base station 9 is shown to be connected to the data communication network 6, and thus to the management unit 4. The connection between the management unit 4 and the base station 9 may be based on any appropriate data transport protocol, such as the Internet Protocol (IP). The base station  
10 9 is adapted to provide an interface between the data network 6 and one or several devices in the location of the base station 9, e.g. in a house, in a suburban housing area or block of flats.
- 15 The user 14 is provided with a portable user device. The user device may comprise a portable on-site controller 10 that the user 14 may see and operate while watching the TV apparatus 1. The controller 10 provides an interactive remote station that may communicate over a wireless interface 13 with the base  
20 station 9. To enable this, the controller 10 of Figure 1 is provided with a radio module 12 that is enabled to have a wireless high speed data connection with the base station 9. Thus the data network 6 and the base station 9 are enabled to provide broadband communication between the management unit 4  
25 and the controller 10.

- The wireless link 13 between the controller 10 and the base station 9 is preferably based on a communication protocol that is capable of providing a local low power wireless service.
- 30 The low power wireless service may be different from the standard and protocols of the data network 6. The low power wireless link may be provided by a short range radio link (SRRL) between any two or more stations that are close enough

to each other. The short range low power wireless services operate typically in a unlicensed frequency range, such as in frequencies over 2 GHz. For example, in the USA unlicensed ISM bands 2.4 to 2.5. GHz and 5.725 to 5.875 GHz are permitted.

5

The controller 10 and the base station 9 are provided with appropriate wireless modules 12 and 19, respectively such that duplex traffic between the two stations is enabled. The wireless modules 12 and 19 are preferably based on

10 standardised low power radio service components. It should be appreciated that although this description describes a base station comprising a wireless module, the base station 9 may in its simple form constitute of a wireless transmitter and/or receiver and means for interfacing the transmitter and/or  
15 receiver to the data network 6.

An appropriate low power wireless service that may be used in the embodiments is based on a so called Bluetooth™ protocol. The term Bluetooth™ refers to a technology specification by  
20 the Bluetooth special interest group (SIG) for small factor, low-cost, short range radio links (SRRL) between various devices, such as mobile stations, portable personal computers, and other portable devices. Bluetooth™ facilitates real-time voice and data transmissions. If the controller 10 is equipped  
25 with a Bluetooth™ wireless module 12, a connection may be established between the controller and the base station 9 that is also provided with a Bluetooth™ wireless module 19. The Bluetooth™ technology allows for a replacement of any cables that conventionally have connected devices to each other with  
30 a universal short range radio link. The wireless Bluetooth™ modules operate in an unlicensed ISM band at 2.4 GHz that is globally available. The connection may be established and maintained even when the controller 10 and the base station 9

are not within line of sight, e.g. are located in different rooms. The short range link may cover a radio service area of, for example, about 10 meters, but the range can also be extended to around 100 meters, e.g. by means of an amplifier.

5

The Bluetooth™ basement protocol is a combination of circuit and packet switching. Slots can be reserved for synchronised data packets. A data packet nominally covers a single slot, but can be extended to cover up to five slots, or even more.

10 The Bluetooth™ specification defines a fast acknowledgement and frequency hopping scheme to improve the robustness of the wireless link and to combat interference and fading.

Bluetooth™ wireless modules are adapted to avoid interference from other signals by hopping to a new frequency after

15 transmitting or receiving a data packet. The use of short data packets and fast hopping may also limit the impact of other devices such as microwave ovens or other receivers and/or transmitters. A shaped, binary FM modulation is applied to minimise the complexity of the transceiver of the wireless  
20 module.

The Bluetooth™ radio service can support an asynchronous data channel, up to three simultaneous synchronised voice channels or a channel which simultaneously supports asynchronous data  
25 and synchronised voice. The gross data rate of the present Bluetooth™ applications is 1MB per second. Each voice channel may support a 64 kb/s synchronous link. At present the asynchronous channel can support an asymmetric link of 721 kb/s in either direction while permitting 57.6 kb/s in the  
30 return direction, or a 432.6 kb/s symmetric link. A time division duplex scheme may be used for full duplex transmission. The network topology of the Bluetooth™ system may support both point-to-point and point-to-multipoint



connections, thereby enabling communication between several devices at the same time.

5 The size of the Bluetooth™ wireless module is relatively small and typically comprises a single chip. A Bluetooth™ chip may comprise all necessary processors, radio part, interface means and so on. Since the chip is a standardised element, the implementation costs of the wireless controller 10 may be relatively low. The power consumption of a typical Bluetooth™  
10 arrangement is also low. The fast frequency hopping scheme enables robust radio links between the controller 10 and the base station 9.

The controller 10 may be provided with voice input/output  
15 means 16 and/or various trigger sensors in the body thereof. A graphics display 11 and selection buttons 15 may also be provided in the controller. The display 11 may be adapted to show still images or video images that are based on signals received via the wireless transmission from the base station  
20 9. The display 11 may also comprise a so called touch screen function. The controller 10 may be IP enabled. The controller 10 may have a customised application loaded into it.

With reference now also to Figure 2, operation of an  
25 embodiment of the present invention is explained in more detail. The TV programme production company may create a program which make use of the interactive controller 10. The programme may be a recorded or live program and transmitted in a conventional fashion. The generation of messages to be  
30 communicated between the controller 10 and the management unit 4 may associate with predetermined events in the production. According to a preferred embodiment a time-code of the film constitutes an event that triggers signalling from the

management unit 4 towards the controller 10. The progression of the program can be followed and/or the time-code detected by the element 3 of the broadcasting system 5. The element 3 may be used to generate and transmit a request for the management unit 4 over the connection 17 to transmit data towards the controller 10. According to a possibility the element 3 or the management unit 4 monitors for a predefined event, e.g. a predefined sound effect or visual effect in the program, and upon detection thereof initiates the data transmission. The sound effect detection or visual effect detection may be based on digital sound or image processing techniques. The triggering of the messaging may also be based on combination of several events, e.g. such that a time-code condition and a visual effect has to be met before any message is generated and/or transmitted or that it is enough that one event of several possible events is detected. The transmission of data from the management unit 4 may also be initiated upon receiving a request from the controller 10. The data that may be sent to the controller 10 may take, for example, the form of voice data, video data and control instruction data.

The user 14 may receive personalised content from the management unit 4 and may thus be provided with an enhanced television viewing experience. Each user may be personalised in the management unit or service provider portal based on information stored in the database 7 thereof. The personalised information may be obtained e.g. when a controller is purchased. The buyer may complete a registration form identifying the owner of the controller or the users of the controller (e.g. all members of a family). In this way, the controller and/or interaction can be personalised to each individual. One or more of the following criteria may be used as part of the personalisation process: first name; last name;

date and/or place of birth; sex; colour of eyes; colour of hair; personal interests/preferences; hobbies; nationality; preferred language; and so on. Even detailed health information, such as eyesight or information regarding  
5 difficulties in hearing, can be stored in the database, as this may be used e.g. when providing programs to special groups.

The personal information can also be submitted e.g. by post,  
10 Internet, (e.g. through Hyper Text Mark-up Language HTML pages), telephone or personal visit to the provider of the interactive services or by any other appropriate way. This information will be stored in the database 7 and the controller is personalised to each viewer based on the stored  
15 information. The stored data may be used when predefined events in the program or a request by the controller trigger the procedure for data transmission to the controller.

The triggered message and personalisation data may be combined  
20 to form a "video event" or a "Sound Event". An example of the latter is a birthday song that is presented to a person on his/hers birthday. The generated event is sent to a gateway 8 where e.g. the sound file is converted using e.g. Voice Over IP protocol and transmitted over a data network 6 to the  
25 controller 10.

The user 14 may activate the controller 10 whilst watching a program. The user may input various information, such as his/hers identity, information regarding the channel he/she is  
30 watching and so on. This information may also be provided by the receiver apparatus, either via a connection with the controller 10 or base station 9. To enable the communication with the other devices in the household, the TV may be

provided with a similar wireless module as the controller, or the communication may occur e.g. via a conventional infrared link. The controller may then generate and transmit a message to the management unit, and more particularly, to the

5 processor 5 thereof. Based on the message from the controller 10 and/or information stored in the database 7, the processor 5 generates a content entity that is transported back to the controller and presented to the user 14 thereof.

10 According to an embodiment the controller is associated with a toy, such as a teddy bear 10 of Figure 4. It should be appreciated that in the following description any reference to Teddy 10 is also a reference to any portable on-site controller, whenever appropriate. When the cuddly toy, such as  
15 the teddy bear 10, is not used as an interface towards the TV system, it can be played with in a normal manner. When a particular broadcast starts, the child may activate the toy e.g. by squeezing the toy's nose or by touching or pressing other predefined parts or activation means of the toy. The toy  
20 is activated, i.e. 'comes to life', and as the broadcast continues, the toy may ask questions in relation to the broadcast. The child may interact with the program by sending responses through the Teddy (e.g. by pressing one or several of the buttons thereof, by touching an element of the toy  
25 given to him/her by the program or simply by speaking to the toy). The answers may be verified by the management unit 4, and feedback may be given to the child regarding the correctness of the answers.

30 Sound messages may be output by one or more speakers built into the Teddy (for example, in the mouth of the teddy bear). The sound message may be based on the signal fed by the VoIP conversion. A microphone may also be built into the Teddy

(e.g. in one or both ears 16) allowing the child to talk back. The input may again be encoded using VoIP and transmitted back to the control system 4, where a speech recognition software could interpret what has been said. The control system 4 may  
5 then generate an appropriate response.

In accordance with a further embodiment the design of the controller 10 is such that mechanical movement of at least some parts thereof are enabled. This may affect the amount of  
10 battery power required, but would also add to the over-all design. For example, if the controller is in a form of a toy, e.g. the Teddy, movement of the mouth, eyes, head, limbs and ears of the toy are all possible. The movement may be controlled by the management unit 4 via the data network. For  
15 example, the movements of the various elements of the Teddy bear may follow the story of the program, or give feedback to the child based on the responses he/she has given to the questions. It should be appreciated that a similar control instruction mechanism may be employed to control the operation  
20 of any controller and/or the various components thereof that may be employed when implementing the embodiments of the present invention.

A further embodiment of the invention will now be described  
25 with reference to Figure 3. A video recorder 20 is shown to comprise a wireless module 21 that is capable to communicate with a base station 9, preferably via a Bluetooth™ wireless link. The video recorder is adapted to detect a time code or any other indication in the recorded program. The detection of  
30 the indication triggers signalling from the video recorder (VCR) towards the base station 9, and further to a management unit 4 via a data network 6. In response the management unit 4 may generate and transmit predefined content to be presented

to the user of the recorder. The embodiment enables interactive viewing of recorded programs, the difference to Figure 1 embodiment being that the triggering event may originate from the video recorder 20 that is typically at the location of the viewer 14 rather than from the broadcasting system 5.

The video recorder 20 may include in the transmission information that identifies the program and/or the user and so on. The presentation of the content to the user may occur either by means of the video recorder 20 (that is typically connected to a TV apparatus) or by a controller unit 10. The controller 10 may be similar to the ones described in connection with Figures 1 and 2.

15

It should be appreciated that the replaying device 20 may be any device capable of presenting a program on a storage media, such as on a video tape, digital video disk (DVD), on computer disk and so on and that the program to be shown via the TV screen does not necessarily need to be broadcast via a broadcasting system.

20

According to a further embodiment, the video recorder 20 or the TV apparatus and the controller 10 may communicate with each other over a wireless link 23 or via the base station 9. In the latter case the base station acts as a hub between the various devices, such as 10 and 20 connected thereto.

25

According to an embodiment, the video recorder 20 or the TV apparatus is provided with means for detecting a predefined event from the broadcast signal. The means may comprise e.g. a dongle adapted to interpret the time-code from the broadcast signal. After detection of the event, a message is sent over

30

the short range link either to the base station 9 or the controller 10. This embodiment enables an arrangement where it is not necessary to have a communication link (such as link 17 in Figure 1) between the broadcasting system 5 and the management unit 4. This is enabled even in instances where the user is viewing a program that is not recorded and/or replayed by the recorder 20, but is only received and immediately represented by the TV apparatus. In addition, the embodiment may enable presentation of the additional content by means of the TV apparatus, e.g. via an additional window opened on the screen thereof or by replacing the picture on the screen that is based on the broadcast signal by a picture that is based on data communicated from the management unit 4.

The messaging between the video recorder 20 and the base station 9 may also "hop" via the controller 10. Before the next hop, the user of the controller 10 may confirm that data is actually to be transmitted to the remote management unit 4 or to the video recorder 20 and/or the TV apparatus.

20

Figure 4 shows an alternative embodiment to that of Figure 1. In the Figure 4 embodiment the data network 6 comprises a network that is capable of providing wireless packet switched data communication services, such as a General Packet Radio Service GPRS network, EDGE (enhanced data rate for GSM evolution) Mobile Data Network or an appropriate third generation telecommunication system such as a CDMA (code division multiple access) or TDMA (time division multiple access) based 3<sup>rd</sup> generation telecommunication systems referred to as Universal Mobile Telecommunication System (UMTS). The GPRS network is described in more detail for example in 3GPP technical specification 3G TS 23.060 "General Packet Radio Service (GPRS); Service Description; Stage 2",

January 2000. This document is incorporated herein by reference. A UMTS system that is based on a WCDMA (wideband code division multiple access) is described in more detail e.g. in UMTS related 3GPP technical specifications.

5

If the data communication is based on use of the public land line mobile networks (PLMN), then the base station 9 would be provided by means of a base station of the PLMN system instead of a short range radio link home base station of Figure 1. The controller 10 may be enabled to communicate directly with said PLMN base station 9. To enable this, the controller 10 may contain e.g. a GPRS transceiver module and an appropriate data processing unit, such as a Symbian EPOC micro-processor. The EPOC platform may be used because it supports Wireless Application Technology (WAP) and may be used with a Voice Over IP (VoIP) client. According to an alternative embodiment the short range radio link home base station is enabled to communicate with the base station of the PLMN systems.

20 Data rates up to 115kbit/s may be transmitted via the wireless interface in accordance with the present GPRS specifications, although the rate may be even more in the future applications. This enables wireless transmission of information at a speed that may be used in the embodiments. The introduction of GPRS (General Packet Radio Service) is one of the key steps in the evolution of today's GSM (Global System for Mobile) networks to third generation systems, and the first commercial GPRS services are believed to be launched in near future. Following the arrival of GPRS, a further step in the bandwidth model is 25 believed to occur with EDGE, with speeds of up to 384kbit/s being possible. The bandwidth potential of the UMTS is in the first phase believed to be up to 2Mbit/s, and even more in the future. The wireless packet switched services will enable the 30



embodiments of the invention due to their capability of providing wireless high speed data connection that was not facilitated by the conventional circuit switched wireless connections.

5

An advantage of the packet switched services when compared to the conventional data services is that the packet switched service will always be available. The packet switched service may also be referred to as connectionless services, as there  
10 will not be any communication circuits. Instead, each of the data packets is provided with an address and the individual packet are routed to the destination based on the address information. The user of the packet switched services may pay only for the content used and not the length of time  
15 connected. This enables a seamless access to a whole range of new and existing Internet Protocol (IP) based services. The viewers will be able to stay permanently logged-on to the interactive services and to send data to and to receive data from the management unit of the television system 5 with large  
20 file attachments in an instant. Since the viewers may be always connected and always on-line, the interactive services will be easy and quick to access and, with the capability to charge per data bit sent and received, customers will be able to pay only for the usage of the data transmission resources,  
25 e.g. per a data packet transmitted.

According to an embodiment, wireless application protocol (WAP) technology may be employed for the wireless transmission. For example, the display and selection buttons  
30 built into the controller 10 may also be based on the use of the wireless application protocol (WAP).

The user may also be able to customise the interactive service based e.g. on an HTML interface and a PC. In addition to receiving content and/or interacting with the programs, the user may also use the controller to other purposes, such as  
5 for ordering e.g. video-on-demand type services or goods/services offered by the broadcast program.

It should be appreciated that whilst embodiments of the present invention have been described in relation to some  
10 specific types of programs and user equipment, embodiments of the present invention are applicable to any other suitable type of control equipment and programmes. For example, the programs may ask the viewers to express their opinion or give their vote in issues raised by the program.

15

It is also noted herein that while the above describes exemplifying embodiments of the invention, there are several variations and modifications which may be made to the disclosed solution without departing from the scope of the  
20 present invention as defined in the appended claims.

**Claims**

1. A method for presenting a program for a user, comprising:  
storing information that associates with the user in a  
5 remote unit;  
providing a program representation device with a program  
signal;  
presenting the program based on the program signal; and  
in response to a predefined event, transporting data that  
10 associates with the program based on said stored information  
between the remote unit and a user device that the user may  
operate while experiencing the program presented by the  
representation device, the data being transported via a data  
network and a wireless communication link between the user  
15 device and the data network.
2. A method as claimed in claim 1, wherein data is  
transported from the remote unit.
- 20 3. A method as claimed in claim 1 or 2, wherein data is  
transported from the user device.
4. A method as claimed in any preceding claim, wherein a  
broadcasting system provides the representation device with  
25 the program signal.
5. A method as claimed in any of claims 1 to 3, wherein  
apparatus for replaying recorded programs provides the  
representation device with the program signal.
- 30 6. A method as claimed in any preceding claim, wherein the  
user device comprises a portable controller.

7. A method as claimed in claim 5, wherein the user device comprises the apparatus for replaying recorded programs.

8. A method as claimed in claims 5 and 6, further comprising  
5 wireless communication between the controller and the apparatus for replaying recorded programs.

9. A method as claimed in claim 8, wherein data is transmitted in hops between said apparatus for replaying  
10 recorded programs, the controller and the data network.

10. A method as claimed in any of claims 1 to 5, wherein the user device comprises the representation device.

11. A method as claimed in any preceding claim, wherein data  
15 that associates with the program is stored in the remote unit.

12. A method as claimed in any preceding claim, wherein a base station interfaces the wireless link to the data network.  
20

13. A method as claimed in any preceding claim, wherein the wireless link comprises a short range radio link.

14. A method as claimed in any preceding claim, wherein data  
25 is transported over the wireless link in an unlicensed radio frequency band.

15. A method as claimed in claim 14, wherein the wireless link operates at a frequency band that is about 2.4 GHz.  
30

16. A method as claimed in any preceding claim, comprising transportation of data packets.

17. A method as claimed in any preceding claim, wherein the wireless link employs frequency hopping.

18. A method as claimed in claim 16 and 17, wherein the  
5 frequency of the wireless link is changed between the subsequent data packets.

19. A method as claimed in any preceding claim, wherein the wireless link is based on a universal short range radio link  
10 protocol.

20. A method as claimed in claim 19, wherein the protocol is based on a protocol defined by Bluetooth™ Special Interest  
15 Group.

21. A method as claimed in any preceding claim, wherein the data transported over the wireless link comprises control instructions for the user device.

22. A method as claimed in any preceding claim, wherein the data transported over the wireless link comprises additional information that associates with the program.

23. A method as claimed in any preceding claim, wherein the  
25 data transported over the wireless link comprises further content that associates with the program.

24. A method as claimed in any preceding claim, wherein the data transportation between the user device and the remote  
30 management unit provides interaction between a viewer of a television program provided by a television system and the television system.

25. A method as claimed in any preceding claim, wherein the user device generates a packet data message and initiates the transmission of the packet data message to the remote management unit.

5

26. A method as claimed in claim 25, wherein the remote management unit generates a further packet data message in response to receiving the packet data message from the user device.

10

27. A method as claimed in any preceding claim, wherein the program includes at least one event to which the user may react by inputting a response into the user device.

15

28. A method as claimed in any preceding claim, wherein the user device presents to the user of the program an audio message and/or a visual message based on data transported from the remote management unit.

20

29. A method as claimed in claim 28, wherein one or more questions and/or tasks are presented to the user.

30. A method as claimed in claim 28 or 29, wherein feedback is transported to the user device regarding a response the

25

viewer has input into the user device.

31. A method as claimed in any preceding claim, comprising transportation of voice messages based on the voice over internet protocol (VOIP).

30

32. A method as claimed in any preceding claim, wherein the data transportation is triggered by a predefined event in the program.

33. A method as claimed in any preceding claim, wherein the data transportation is triggered based on monitoring of a time-code that associates with the recording media used for storing the program.

34. A method as claimed in claim 33, wherein an element of the broadcasting system monitors for the time-code.

35. A method as claimed in claim 33 when appended to claim 5, wherein the apparatus for replaying recorded programs monitors for the time-code.

36. A method as claimed in claim 33 when appended to claim 6 or 10, wherein the user device monitors for the time-code.

37. A method as claimed in claim 32, wherein the event detection is based on detection of a predefined voice effect or visual effect in the program.

20

38. A method as claimed in any preceding claim, wherein the user triggers the data transportation by inputting a speech message into the controller, and wherein the speech message is modified for the transmission over the wireless link and the data network and the speech message is recognised in the remote management unit.

25

39. A method as claimed in any preceding claim, wherein at least one element of the user device is operated based on data received from the remote management unit.

30

40. A method as claimed in claim 39, wherein the at least one element is moved based on a control instruction in the data message generated by the remote management unit.

5 41. A method as claimed in any preceding claim, wherein the data network provides broadband data transportation services for the users thereof.

10 42. A method as claimed in any preceding claim, wherein the data network comprises at least one of the following technologies: an Asynchronous Data Subscriber Line; an Integrated Services Digital Network; a General Packet Radio Service network; Enhanced Data Rate for GSM Evolution Network; a Universal Mobile Telecommunication System network.

15 43. A method as claimed in any of the preceding claims, wherein data that is to be transported to the user device is personalised before transportation based on the information stored in a database of the remote management unit.

20 44. A method as claimed in claim 43, wherein the user is enabled to modify the information stored in the database.

25 45. A method as claimed in claim 43 or 44, wherein the data is routed to the user device based on information in the database.

30 46. A method as claimed in any preceding claim, wherein the information of the user stored in the management unit comprises at least one of the following: first name; last name; date of birth; place of birth; sex; colour of eyes; colour of hair; personal interests/preferences; hobbies; nationality; preferred language; health information.



47. A method as claimed in any preceding claim, wherein the user device associates with a toy.

5 48. A method as claimed in claim 47, wherein the toy is a cuddly toy, a dolly or the like.

49. A method as claimed in any preceding claim, wherein the program is one of: an educational program; a game show, a  
10 documentary; a news program; a sports program; an entertainment program; a comedy; a drama; a movie; a children program.

50. A system for presenting a program to a user of a program  
15 representation terminal, comprising:

means for providing a program signal to the program representation terminal;

a data communication network;

20 a remote management unit that is connected to the data communication network, said remote management unit comprising a processor for processing data that associates with the program and a storage unit for storing information that associates with the user; and

25 a user device operable by the user while experiencing the program, the user device being associated with a wireless module enabling a wireless communication link between the user device and the data communication network, wherein the user device is adapted to present information to the user based on data that is generated by the management unit based on the  
30 stored user information and transported to the user device from the management unit via the data communication network and the wireless link.

52. A system as claimed in claim 50, wherein the program signal is provided by a broadcasting network distributing the program signals to a plurality of representation terminals.

5 53. A system as claimed in claim 50 or 51, wherein the program signal is provided by apparatus for replaying recorded programs.

54. A system as claimed in any of claims 50 to 53, wherein  
10 the user device comprises a portable controller that is provided with means for presenting to the user an audio message and/or a visual message based on the data generated by the management unit.

15 55. A system as claimed in claim 53, wherein the user device comprises the apparatus for replaying recorded programs.

56. A system as claimed in any of claims 50 to 52, wherein  
20 the user device comprises the representation terminal.

57. A system as claimed in any of claims 50 to 56, comprising a base station for interfacing the wireless link to the data network.

25 58. A system as claimed in any of claims 50 to 57, wherein the wireless link comprises a short range radio link.

59. A system as claimed in claim 58, wherein the wireless  
30 link operates at a frequency band that is about 2.4 GHz.

60. A system as claimed in any of claims 50 to 59, wherein the wireless link is adapted to employ frequency hopping.

61. A system as claimed in claim 60, wherein the frequency of the wireless link is adapted to be changed between subsequent data packets.

5 62. A system as claimed in any of claims 50 to 51, wherein the wireless link is based on a protocol defined by Bluetooth™ Special Interest Group.

10 63. A system as claimed in any of claims 50 to 62, wherein the data transportation between the user device and the management unit provides interaction between a viewer of a television program provided by a television system and the television system.

15 64. A system as claimed in any of claims 50 to 63, comprising means for monitoring for a predefined event.

20 65. A system as claimed in claim 64, adapted to transport the data in response to detection of the predefined event.

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**PUBLIC BROADCAST NETWORK**

**THE HUB**

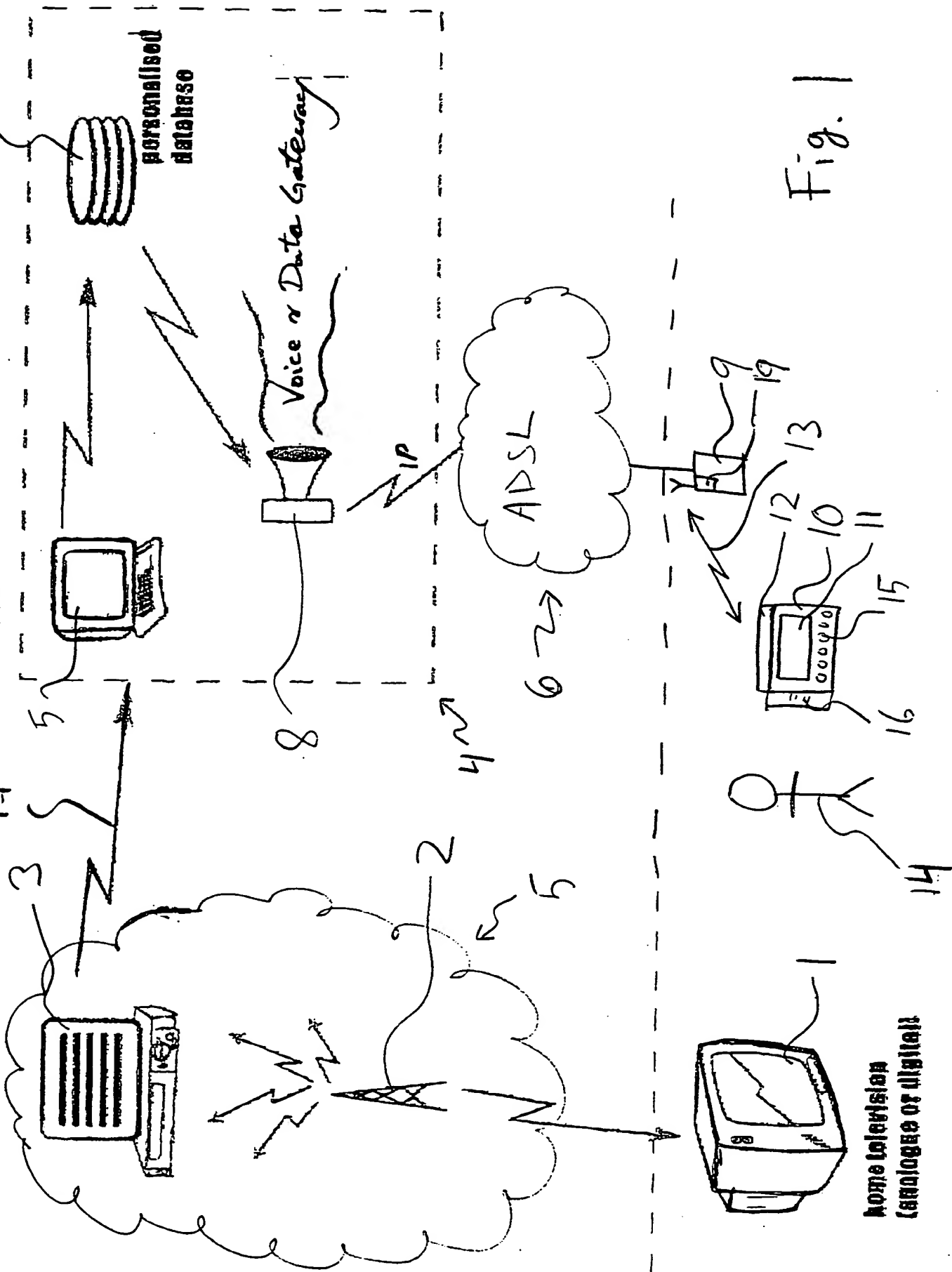


Fig. 1

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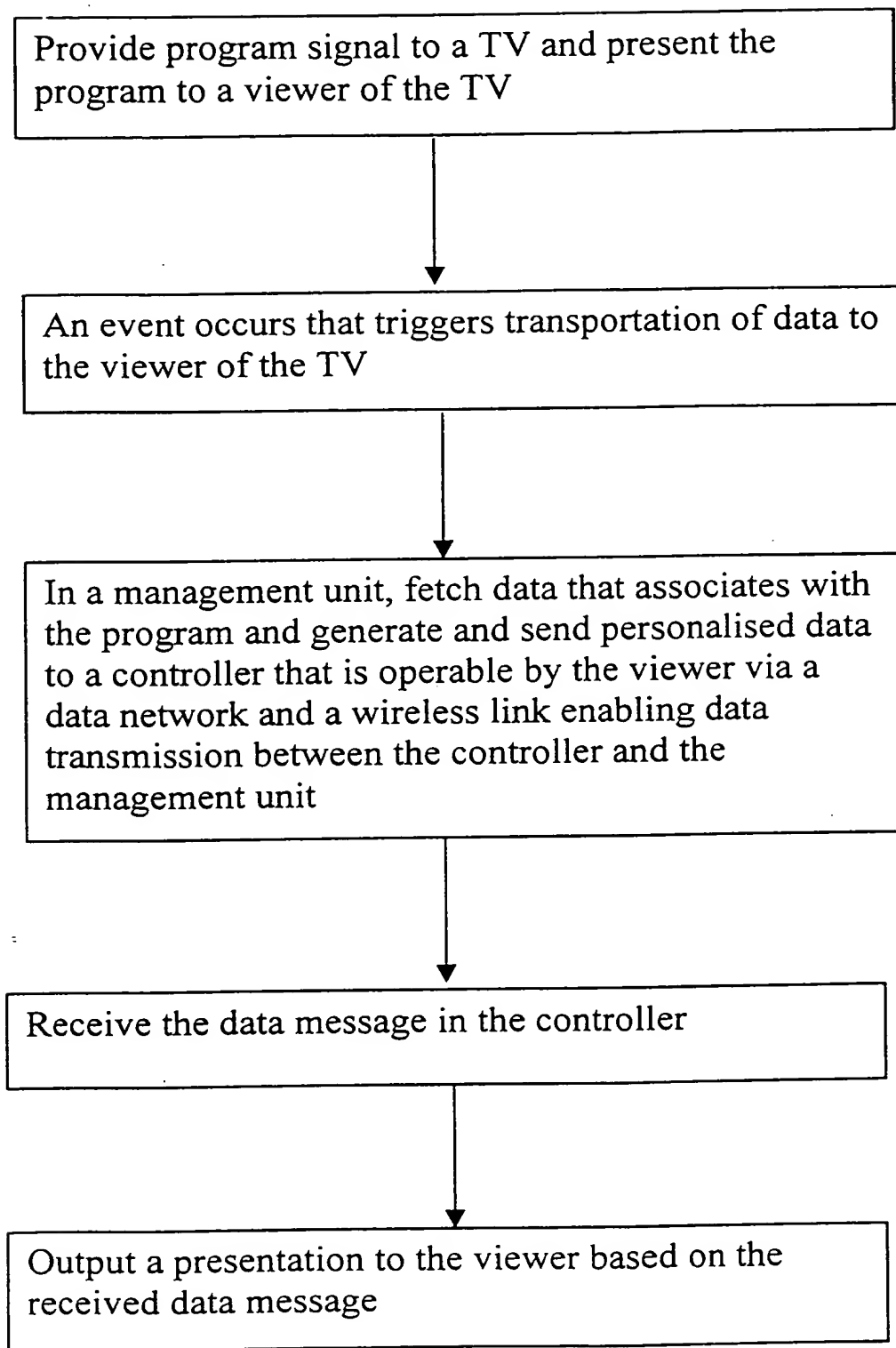


Fig. 2

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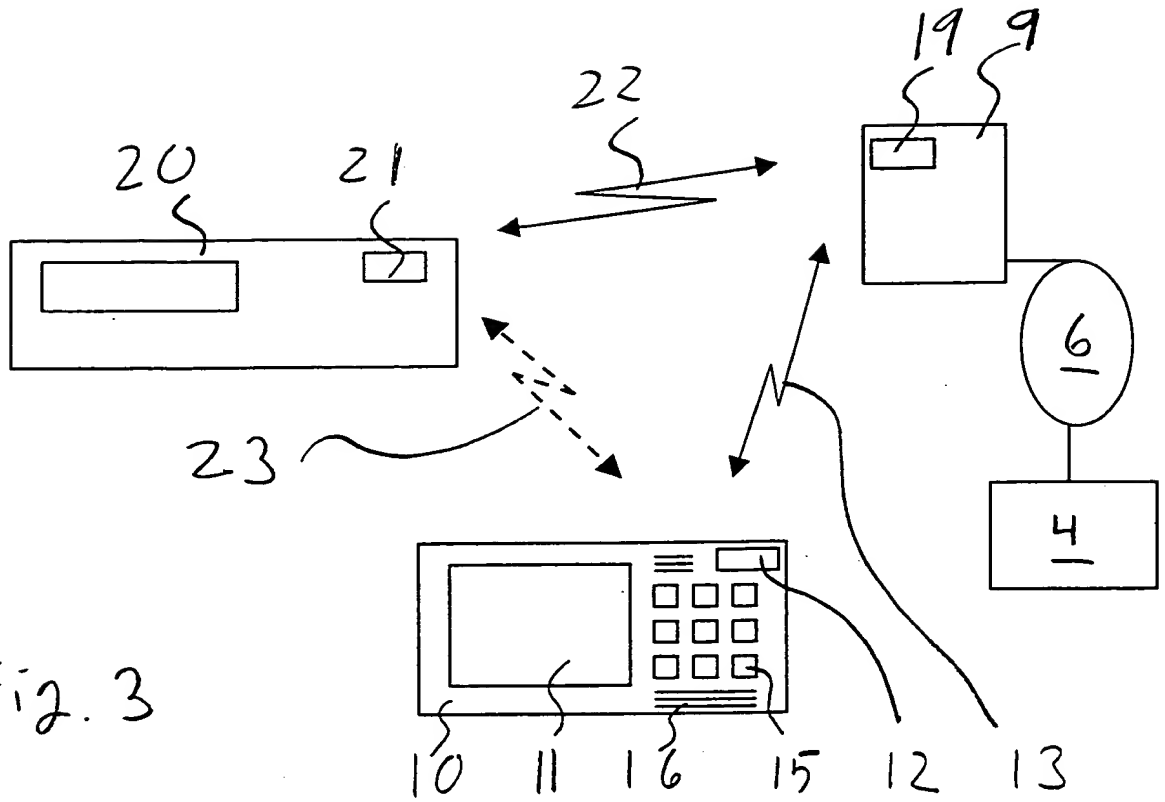


Fig. 3

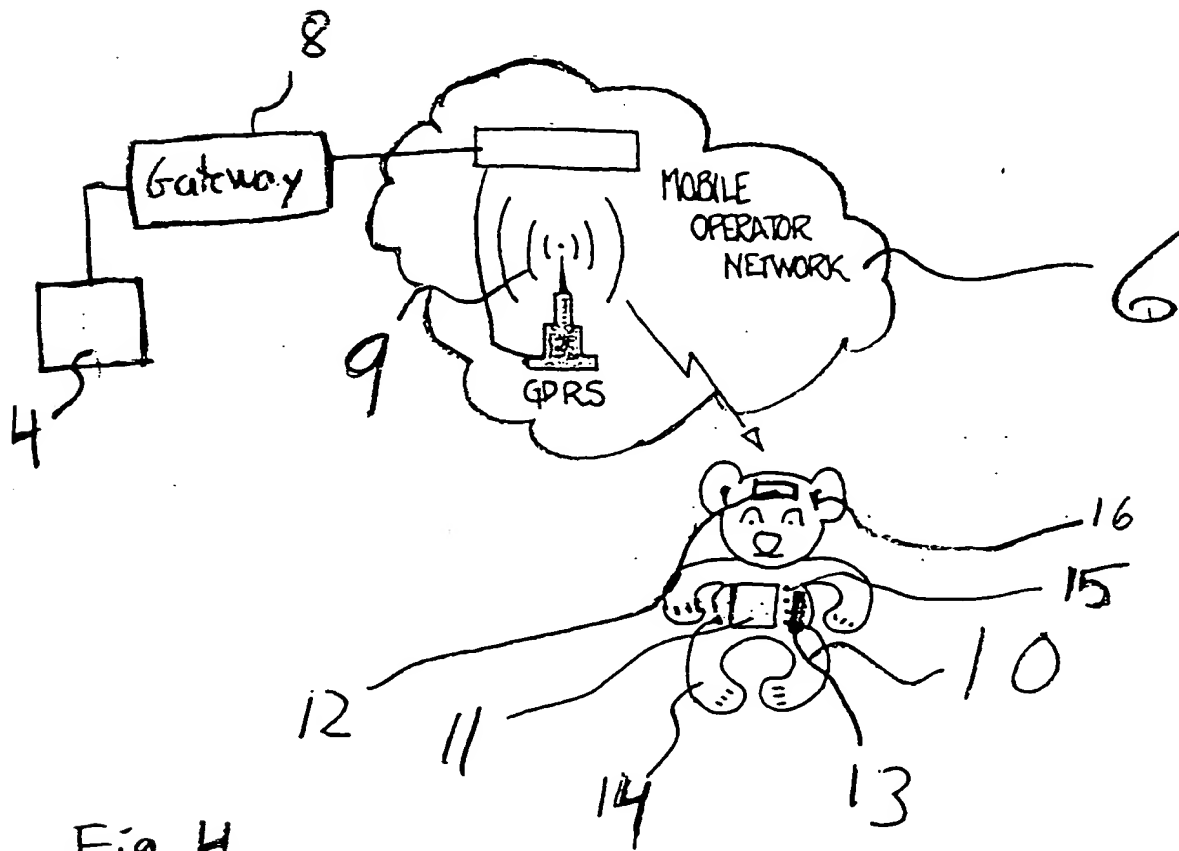


Fig. 4

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